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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/823,582	03/31/2001	Alexander V. Reshetov	42390P8654	6822

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EXAMINER

ARNOLD, ADAM

ART UNIT	PAPER NUMBER
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2671

DATE MAILED: 04/19/2004.

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/823,582

Applicant(s)

RESHETOV ET AL.

Examiner

Adam Arnold

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 03 February 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 28-66 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 28-66 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 6/16/2003 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

The examiner acknowledges the receipt and entry of the applicant's amendment.

#### ***Claim Objections***

1. Claim 32 is objected to because of the following informalities: it is not a complete sentence. It is not clear whether the applicant intended to end the sentence "wherein the appearance data comprises color data," or whether more matter is to be added. Appropriate correction is required.

#### ***Claim Rejections - 35 USC § 101***

Claims 28-33 and 64 are rejected under 35 U.S.C. 101 because they are directed to non-functional data and are therefore unstatutory.

#### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 28-38, 40-51, 55, 58-61 and 63-66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Perry, U.S. Patent No. 6,483,518, in view of Mallet, U.S. Patent No. 6,452,596. Referring to claim 28, Perry discloses a machine-readable data structure stored on a

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machine-readable medium (col. 8, lines 33-35) comprising appearance data (col. 10, line 31) for a plurality of nodes (col. 19, line 9) that represent a portion of a surface of a three-dimensional object (col. 8, lines 11-12), displacement data for each node (col. 8, lines 13-14 and Figure 1, num. 106) from a reference (Figure 1, num. 107) and coordinate system data (col. 8, line 2), where the 3 types of data are on one data structure (col. 8, lines 2-8). Perry does not disclose where the coordinate system data is local to the nodes. Mallet discloses a coordinate system local to a plurality of triangles (col. 9, lines 49-50). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to have the coordinate system local to the nodes. One of ordinary skill in the art would have been motivated to do this in order to facilitate parallel processing of polygon objects (see col. 3, line 27 disclosing polygon processing in Mallet) and increase processing speed by devoting different processors to parallel tasks.

Referring to claim 29, Perry in view of Mallet discloses appearance and displacement data with an independent value for each of the nodes (Perry, col. 10, lines 28-33).

Referring to claim 30, Perry in view of Mallet discloses where the coordinate system data indicates a base plane (Perry, col. 7, line 67 and Figure 1) and where the displacement data indicates a displacement distance from a corresponding reference in the plane (Perry, col. 8, lines 13-15).

Referring to claim 31, Perry in view of Mallet discloses where the coordinate system data comprises an origin, first axis, second axis (Perry, col. 7, line 67) and length associated with the first axis (Perry, Figure 1).

Referring to claim 32, Perry in view of Mallet discloses where the appearance data comprises color data (Perry, col. 8, line 8).

Referring to claim 33, Perry in view of Mallet allows the user the option to select any number of nodes (i.e., in order to provide efficiency for recursive procedures in that there is a central node for each division—see Perry, col. 19, line 10, which allows any number of nodes to be selected and col. 15, lines 1-2, for recursive subdivision of cells).

Referring to claim 34, Perry in view of Mallet discloses a method for creating computer graphics (Perry, col. 7, lines 60-61).

Referring to claim 35, Perry in view of Mallet discloses a display device (Perry, col. 20, line 67).

Referring to claim 36, Perry in view of Mallet discloses accessing graphical data for a plurality of nodes (Perry, col. 19, line 9) that represent a portion of a surface of a three-dimensional object (Perry, col. 8, lines 11-12). The remarks presented above with respect to claim 28 apply equally to the remainder of this claim.

Referring to claim 37, the remarks presented above with respect to claims 29 and 36 apply equally to this claim.

Referring to claim 38, the remarks presented above with respect to claims 30 and 36 apply equally to this claim.

Referring to claim 40, Perry in view of Mallet discloses determining four pixels of a quadrilateral that correspond to four nodes from the plurality of nodes, determining an inner pixel contained within the quadrilateral (Perry, Figure 25) and interpolating a value for the inner pixel by using neighboring vertices (Perry, col. 19, line 39 to col. 20, line 4).

Referring to claim 41, Perry in view of Mallet discloses determining four pixels of a quadrilateral that correspond to four nodes from the plurality of nodes, determining an inner

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pixel contained within the quadrilateral (Perry, Figure 25) and interpolating a value for the inner pixel by using neighboring vertices (Perry, col. 19, line 39 to col. 20, line 4).

Referring to claim 42, the remarks presented above with respect to claim 33 apply equally to this claim.

Referring to claim 43, the remarks presented above with respect to claim 35 apply equally to this claim.

Referring to claim 44, the remarks presented above with respect to claims 28 and 35 apply equally to this claim.

Referring to claim 45, the remarks presented above with respect to claim 29 apply equally to this claim.

Referring to claim 46, the remarks presented above with respect to claim 30 apply equally to this claim.

Referring to claim 47, the remarks presented above with respect to claim 33 apply equally to this claim.

Referring to claim 48, Perry in view of Mallet discloses a rendering unit (Perry, col. 21, line 14). The remarks presented above with respect to claim 28 apply equally to the remainder of this claim.

Referring to claim 49, the remarks presented above with respect to claims 29 and 48 apply equally to this claim.

Referring to claim 50, the remarks presented above with respect to claims 30 and 48 apply equally to this claim.

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Referring to claim 51, the remarks presented above with respect to claims 31 and 48 apply equally to this claim.

Referring to claim 55, Perry in view of Mallet discloses where the rendering unit comprises software (Perry, col. 7, line 56—"data structures" which are implemented in software given their variability).

Referring to claim 58, Perry in view of Mallet discloses a computer for rendering graphics (col. 8, line 22).

Referring to claim 59, the remarks presented above with respect to claim 29 apply equally to this claim.

Referring to claim 60, the remarks presented above with respect to claim 30 apply equally to this claim.

Referring to claim 61, the remarks presented above with respect to claim 31 apply equally to this claim.

Referring to claim 63, the remarks presented above with respect to claim 33 apply equally to this claim.

Referring to claim 64, Perry in view of Mallet discloses spatial patch means (Perry, col. 17, line 19).

Referring to claim 65, the remarks presented above with respect to claim 35 apply equally to this claim.

Referring to claim 66, the remarks presented above with respect to claim 35 apply equally to this claim.

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4. Claim 39 is rejected under 35 U.S.C. 103(a) as being unpatentable over Perry in view of Mallet, further in view of Cox, U.S. Patent No. 5,751,931. Perry in view of Mallet does not disclose removing a node if it lies outside a view volume represented by a clipping function. Cox discloses a clipping surface, which obscures nodes that do not meet a threshold value (col. 2, lines 53-56). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to remove a node if it lies outside a view volume represented by a clipping function. One of ordinary skill in the art would have been motivated to do this in order to exclude data which does not meet a threshold value (see Cox, col. 2, line 55).

5. Claim 52 is rejected under 35 U.S.C. 103(a) as being unpatentable over Perry in view of Mallet, further in view of Johns, U.S. Patent No. 6,366,289. Perry in view of Mallet does not disclose chunks, or memory partition areas. Johns discloses "chunks" which partition memory into 2D regions (col. 5, line 61). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to utilize chunks to partition the memory of a spatial patch. One of ordinary skill in the art would have been motivated to do this in order to optimize memory utilization (see Johns, col. 5, lines 62-64).

6. Claims 53, 54, 56, 57 and 62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Perry in view of Mallet, further in view of Mori, U.S. Patent No. 6,704,018. Perry in view of Mallet does not disclose logic to execute SIMD instructions. Mori discloses SIMD instructions (col. 13, line 65). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to utilize SIMD instructions. One of ordinary skill in the art would have been motivated to do this in order to increase processing speed by sharing the processing load among multiple processors (see Mori, col. 4, lines 64-67).



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Referring to claim 54, Perry in view of Mallet does not disclose a cache. Mori discloses a cache (col. 4, line 19). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to utilize a cache. One of ordinary skill in the art would have been motivated to do this in order to increase processing speed by manipulating high speed memory (see Mori, col. 4, lines 20-22).

Referring to claim 56, Perry in view of Mallet does not disclose an expansion board or graphics controller. Mori discloses a graphics controller (col. 6, line 33). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to utilize a graphics controller. One of ordinary skill in the art would have been motivated to do this because all applications which perform graphics processing require a graphics controller.

Referring to claim 57, the remarks presented above with respect to claim 56 apply equally to this claim.

Referring to claim 62, the remarks presented above with respect to claim 53 apply equally to this claim (i.e. SIMD is a way of implementing parallelism by partitioning data to process it independently).

### ***Response to Arguments***

Applicant's arguments, filed February 3, 2004, have been fully considered and are persuasive. New grounds for rejection have been raised.

The rejections to these claims stand.

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***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Adam Arnold** whose telephone number is **703-305-8413**. The examiner can normally be reached Monday-Thursday and alternate Fridays between 7:00 AM and 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Zimmerman, can be reached at (703) 305-9798.

**Any response to this action should be mailed to:**

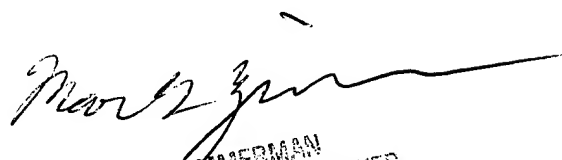
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Washington, D.C. 20231

**or faxed to:**

**(703) 872-9314 (for Technology Center 2600 only)**

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

  
MARK ZIMMERMAN  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600